

## **Psychological Sequelae of Weapons of Mass Destruction on First Responders**

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## **First Responders**

- Firefighters – Unique identity
- Police – Unique identity
- Emergency medical technicians
- Hospital personnel
- Human rescue teams
- Body identification experts

## **Elements of Unique Identity**

- Work is central focus of life.
- If injured, may lose ability to work and, thus, identity.
- Military-like non-crisis structure, but resists micromanagement during crisis.
- Value local (unit) command and control during crisis.

## **Characteristics of First Responders**

- Unique highly-trained group with special societal role.
- Work well in structured organizations with a well-defined chain of command.
- Well trained. Ongoing training. Training important to unit efficiency, morale, and sense of security.
- Strong group identity.
- Possess strong sense of mission.

## **Characteristics of First Responders**

- Reliant for personal safety on the predictable performance of their peers.
- Patriotic.
- Strong sense of camaraderie.
- Likely to socialize in small groups and with families of peers. Feel different than population at large due to uniqueness of work, danger they face, demands upon them and their families, and the mission they must accomplish.

### Characteristics of First Responders

- Expect themselves to function well under acute and chronic stress.
- Put demands of public and job ahead of needs of self and family.
- Maintain physical conditioning.
- Pride self on control of fear when working in dangerous situations and environments.
- See selves as the “best of the best,” who risk their lives to protect others.

### Socially Expected Characteristics of First Responders

- Courage
- Judgment
- Physical conditioning
- Obedience
- Initiative
- Loyalty – given and expected



A Tokyo commuter overcome by the deadly 1995 sarin gas attack  
(CNN/file)

### Tokyo Subway Sarin Attack

- Aum Shinrikyo – March 20, 1995 at 7:55 a.m.
- Plastic bags placed in 5 subway cars.
- 15 stations contaminated with sarin gas.
- 1364 EMTs, 55 doctors, 26 nurses, and 3 clerks on scene.
- 2 hours to identify agent.
- 12 killed; 5,500 injured.

### Response Sequence

- 7:55 a.m., March 20, 1995 – attack occurred.
- 8:16 a.m. (21 min. post attack) - First response by Tokyo Metropolitan Fire Department.
- 8:25 a.m. (30 min.) – First victim walks into St. Luke's Hospital seeking treatment for “unknown illness.”
- 8:40 a.m. (45 min.) – First ambulance arrives at scene.

- 8:43 a.m. (48 min.) – First myocardial infarction victim arrives at hospital.
- 8:50 a.m. (55 min.) – 500 victims in ERs.
- 9:20 a.m. (1 hr. 25 min.) – All outpatient operations at St. Luke's canceled.
- 9:40 a.m. (1 hr. 45 min.) – Officials determined a nerve agent had been used by confirming low cholinesterase levels in victims. Victims were treated with pralidoxime, which was in short supply.

- 10:30 a.m. (2 hr. 35 min.) – First press conference.
- 11:00 a.m. - First TV broadcast of event.
- 12:00 p.m. – Physicians' conference held to standardize triage and treatment.
- 2:00 p.m. – "Mildly" injured patients triaged, treated, and discharged home.

### **Residual Physical Symptoms of Poisoning One Year After Sarin Exposure**

- Ocular symptoms – pain, weakness of eye muscles, diplopia, blurred vision – 18.5%.
- Profound fatiguability – 11.9%.
- Persistent severe headaches – 8.6%.
- Mental dullness – 7.3%.
- Persistent palpitations – 4.3%.

Source - Okumura T, Suzuki K, Fukuda A, et al. The Tokyo subway sarin attack, Parts 1, 2, and 3, *Acad Emerg Med*, 1998.

### **Psychological Symptoms in Survivors One Year After Sarin Attack**

- Phobia relating to enclosed spaces and subways – 12.9%.
- Panic attacks, particularly in confined spaces – 12.9%.
- Re-experiencing fear initially experienced during attack – 11.6%.
- Mental flashbacks of event – 10.6%.

### **Psychological Symptoms in Survivors One Year After Sarin Attack**

- New onset of depression – 7.9%.
- Decreased ability to concentrate – 7.6%.
- Persistent and severe forgetfulness – 9.6%.
- Persistent nightmares – 4.3%.

Source - Okumura T, Suzuki K, Fukuda A, et al. The Tokyo subway sarin attack, Parts 1, 2, and 3, *Acad Emerg Med*, 1998.

### **1st Responders to Tokyo Sarin Attack**

- Didn't initially recognize source of threat.
- No field decontamination of victims undertaken on site.
- No simple removal of clothing instituted.
- Subsequent decontamination of subways and trains required massive support from Japanese self-defense forces wearing special protective chemical suits, which were initially in short supply.



### **1st Responders to Tokyo Sarin Attack**

- First responders entered subway in standard duty clothing without respirators.
- 135 of 1,364 medical first responders (9.9%) were poisoned by sarin -- developed acute symptoms and couldn't function.
- 700+ first responders developed at least minor symptoms of sarin poisoning as it vaporized and bled off victims' clothing during rescue or transport to hospital.



### **1st Responders to Tokyo Sarin Attack**

- EMTs poisoned in ambulances where ventilation was poor.
- In hospital, 23% of medical first responders, who had direct contact with patients, developed symptoms of acute sarin poisoning.



### **Factors in WMD Attacks that Increase Rate of Psychiatric Casualties**

- Enforced helplessness and dependency.
- Severity and duration of the chaos that the attack causes.
- Social isolation imposed by duty assignment.
- Overwork and fatigue.
- Separation from family and friends.

- Inability to obtain important and useful information.
- History of anxiety disorder or depression.
- Poor emotional response at the time of encountering the acute situation.
- Delayed return to a normal life pattern.
- Lack of family or peer support.
- Delayed return to work and social function.

### **Analysis of First Responders' Concerns following Tokyo Subway Sarin Attack – March 20, 1995**

- Unknown nature of attack.
- Time needed to identify specific nature of threat (i.e., nerve gas).
- Lack of respirators and protective clothing available.

### **Analysis of First Responders' Concerns following Tokyo Subway Sarin Attack – March 20, 1995**

- Mass number of casualties.
- High incidence of sarin exposure in first responders.
- Risk for unknown long-term complications from exposure. Many victims had low cholinesterase levels at the end of one year.



### **The World Trade Center Attacks**

- First attack – February 26, 1993.
  - Cyanide added to ANFO explosive to increase killing power of the bomb – not effective.
  - Produced explosion, fire, soot.
  - Structure weakened.

### **World Trade Center Attack, 1993**





**World Trade Center Attack,  
1993**



**World Trade Center Attack,  
1993**



### **WTC Attacks**

**Second attack – September 11, 2001**

**1<sup>st</sup> plane - Accident.**

**2<sup>nd</sup> plane – Attack. Building vulnerable to collapse. NYFD exercised “imminent collapse plan” to free people in the building.**

**Buildings collapse, other secondary buildings collapse**

**Massive debris, dust, subterranean fires rage for two months.**

**Pancaking of floors made body recovery difficult.**



9/11/01



### Impact of 9/11 on NYC Firefighters

- 300+ firefighters and emergency medical personnel killed.
- Loss greater than that from all fire departments in U.S. for period from 1998 – 2000 and 12x greater than for any single incident in the history of any U.S. fire service.

### Fireman Looking Out from Inside the World Trade Center





### **Results of National Firefighters Association Survey of 1,900 First Responders Post 9/11**

- 80% unprepared to respond to attack with weapon of mass destruction (WMD).
- 75% believed they would face an attack with a WMD.
- Only 8% felt they would have to deal with chemical, radiological or biological WMD. Most felt attack would be in form of a bomb.

- No differences between ranks, length of service, or category of firefighter (paid, volunteer, combination).
- Most felt that training was their greatest asset to prepare them physically and mentally to face an attack by WMD.
- Most felt that they needed:
  - More manpower
  - More and better Hazmat firefighting/rescue equipment
  - Better “response plan” and “threat assessment”

- 40% had prepared “mentally and emotionally” to respond to attack by WMD – 50% hadn’t!
- 34.1% of departments reported they had revised their disaster plans.
- Only 11% of departments with no WMD plan had put one in place (won’t happen in our city).

### **Psychological Fears of First Responders in Study**

- 26.1% feared contact with biological or chemical weapons.
- 25.4% felt not adequately trained to deal with WMD.
- 25% lack of adequate resources if WMD attack occurred.
- 20% feared injury by secondary explosive device designed to injure 1st responders (such as with embassy bombing in Africa).

### **Effect of 9/11 on First Responders’ Morale and Motivation**

- 87% more motivated
- 1% considered quitting
- 4% less motivated to serve

### **Effect of 9/11 on First Responders’ Families**

- 70% of families feared ongoing work in profession.
- 31% felt more in danger and feared for their lives.
- 95% of older children discussed event and expressed fear of injury or loss of parent.
- 70% of first responders worried about effects of their potential injury on their families -- gave them pause to be more careful in evaluating what might seem like a routine incident.

### **Specific Agents Causing Concern to First Responders and/or Their Families**

- Biological – smallpox, plague, anthrax, Ebola.
- Chemical – Cyanide, chlorine, phosgene, mustard gas, sarin, tabun, VX.
- “Radiation weapons”.

Firefighters might be protected against gas, but not radiation or bacterial agents.

### **Threats to First Responders Produced by WMD**

- Planned to produce maximal physical, social, psychological, and economic disruption.
- Produce massive casualties.
- May have secondary devices or agents (i.e., 2 different biological agents; skin plus nerve gas; bomb plus cyanide; bomb plus radioactive isotopes).

### **Threats to First Responders Produced by WMD**

- Nature, severity or extent of threat immediately unknown to first responders, producing high levels of uncertainty as to the type of agents involved, how to best prepare, and anticipated duration of crisis.
- High lethality.
- Requires prolonged response.
- Produces a greater vulnerability to injury.
- Occur without warning.

### **Threats to First Responders Produced by WMD**

- Psychological reactions that emanate from human-caused disasters are more intense and prolonged than those that occur following a natural disaster.
- Radiological and biological weapons produce increased feeling of helplessness, vulnerability, and dysequilibrium. Families may be vulnerable. First responders may poison or infect others.

### **Threats to First Responders Produced by WMD**

- Impose extreme and prolonged workload with isolation from family.
- Rescue and recovery of bodies prolonged – 16 days in Oklahoma City, months at World Trade Center.
- Increase exposure to the grotesque = increased psychological risk for body recovery teams, coroners, forensic dentists, etc.

### **Psychological Trauma**

- 20% of disaster workers in Oklahoma City had symptoms of PTSD one month after exposure.
- 40% of residents in Oklahoma City knew someone who worked in the Murrah building.
- 25% of residents near 3 Mile Island had anxiety disorders caused by the potential for long-term and unknown consequences of radiation exposure (similar to Tokyo subway workers exposed to sarin).

### **Injured First Responders**

- May require long-term care for injuries, pain and rehabilitation for physical and sensory loss.
- Loss of friends and comrades -- grief, bereavement -- often reactivated several times by legal proceedings, long-term investigations, televised replays of event.
- Loss of faith in government institutions.
- "Crisis of faith or spirituality."
- Part of target group.

### **Billy Ryan, 32, & Mike Morrissey, 47, Firefighter, Rescue 3**

Each was home when the attack came. They arrived at the site just after the second collapse. "I tried to get overtime the night before but signed up too late," said Morrissey. "It would have been me. Eight men in my 'house were killed." Said Ryan: "Two tables of people from my wedding are Not here anymore. I'm tired of burying my friends."



### **Impact of Physical Injury on First Responders**

- Increased psychological risk, particularly if sustained burns to face, hands, genitals; loss of senses (sight, hearing); spinal injury; or traumatic epilepsy.
- Loss of ability to hold job  
security                  dignity          self  
esteem      loss of identity      loss of  
community.
- Financial crisis.
- Forced dependency on family and helplessness.

### **Alfred P. Murrah Federal Building, Oklahoma City**



**Oklahoma City Firefighter,  
Chris Fields, carries Baylee Almon,  
who later died**



**After five years, rescue workers,  
who are trained to confront  
emergencies, found they needed  
counseling from the Oklahoma  
City bombing.**



**Madrid Train Bombing,  
3/11/04**



**Madrid Train Bombing,  
3/11/04**



**Madrid, Spain**



**Madrid, Spain**



**Madrid, Spain**



**Hotel Bombing, Jakarta,  
Indonesia, 8/5/03**



**Jakarta, Indonesia**



**Jakarta, Indonesia**



**A U.S. Marine talks with an FBI investigator in front of the damaged American Embassy in Dar es Salaam, Tanzania**



**Damaged cars and debris cover the ground outside the U.S. Embassy in Nairobi.**



**U.S. Marine stands guard outside the U.S. Embassy in Nairobi, Kenya, after a huge explosion heavily damaged the embassy and killed dozens.**



Useful interventions for reducing or treating mental stress and subsequent psychiatric disorders in 1<sup>st</sup> responders and their families

**Pre-disaster**

- Training on nature of attacks with WMD – review previous attacks.
- Information about specific stresses and what occurred with other 1<sup>st</sup> responders exposed to them.
- Purchasing and training with specific equipment –chemical suits, Geiger counters, bacterial barrier suits, chemical decontamination equipment, chemical antidote autoinjectors.

- Atomic, biological and chemical first response training modules.
- Developing coordinated response plan with other community agencies.
- Each unit developing members with special expertise who will be available at the time of first response.
- Obtaining materials that would protect families if 1<sup>st</sup> responder is absent during an attack.

- Having family organization in place to assist spouses and children if first responder is not available.
- Developing spousal support groups.
- Developing a plan for communication with family if disaster occurs.

**During disaster**

- Pre-tour of duty briefings to advise of the risks likely to be encountered at the scene.
- Rapid communication of any additional risk factors to personnel at the site or who will imminently respond (i.e., toxic gas, biological risk, radiation hazard).
- Finite duty shifts to prevent fatigue.
- Availability of food and a safe space away from the site and press where responders can informally decompress and debrief.

**During disaster (cont.)**

- Group rest areas with showers, new clothing, food, and communication equipment, including cell phones and TV, to monitor news of the attack and any other attacks that may occur elsewhere and to communicate with families.
- Separation of body recovery and body identification functions at the site so as to lessen the identification of recovery personnel with victims.

**During disaster (cont.)**

- Availability of medical personnel onsite to assist with diagnosis and management of acute stress symptoms.
- Immediate automatic contact with psychiatric consultation personnel for high-risk responders –acute stress reactions, head trauma, facial or other burns, sensory loss victims, crush injuries, etc. – so they can be monitored and have follow-up with family and responder arranged.

#### During disaster (cont.)

- Provide information to families on first responder's safety if he/she is not available to communicate or return home.
- Provide additional personnel and necessary equipment as needed.
- Maintain order and clear command-and- control, with local focus of control around site.

#### Post disaster

- Activate spousal support group.
- Conduct critical incident debriefing with follow-up at weekly intervals x 4.
- Provide information to first responders and their families about the nature of ASD, PTSD and "normal responses to abnormal situations".
- Develop specific psychiatric outreach to community leaders, police and fire departments, family assistance centers, child development centers, schools, etc.

#### Post disaster (cont.)

- Develop health surveillance program to monitor first responders and their families.
- Provide specific cognitive behavioral therapy and pharmacotherapy for acute and post-traumatic stress.
- Use consultation-liaison data developed during crisis to monitor and treat those at high risk who were injured.
- Work with unions and EAP services to define personnel showing late developing symptoms or changes in behavior.

#### Post disaster (cont.)

- Provide family briefings on long-term symptoms and behaviors that require intervention, such as abuse of alcohol or drugs, spousal or child abuse, social isolation, mood shift, irritability, nightmares, etc.
- During debriefing, encourage group support for colleagues and provide mechanism for friends to get help for colleagues without departmental or career stigma.

Source: American Psychiatric Association. *Coping with A National Tragedy*. [www.psych.org/public\\_info](http://www.psych.org/public_info) (2001)

### **Managing Stress in Body-Recovering Personnel**

- Limit time of exposure to the dead and to the scene. Require rest periods for volunteers and professionals.
- Provide rest area with food/beverages, shade with cots, facilities for washing and showering, and protection from news media and onlookers.
- Encourage workers to literally get "off their feet" during breaks.

- Provide changes of clothing, such as socks, T-shirts and underwear.
- Send workers home for food or sleep whenever possible.
- Watch for workers who become overly zealous or dedicated to the task of recovery, working to exhaustion. They are at increased risk for later disability.
- Pair workers with a buddy to help combat potential overwork and provide mutual support.

- Moderate stress by engaging workers in conversation of their choosing – not necessarily about their feelings or the scene. Talking about events of life – not death – is central to health.
- Encourage development of a mindset in which workers do not personalize the bodies that they are recovering or identify with them. Dealing with personal effects is one of the most difficult aspects of body recovery, especially if workers personalize or identify with the victims.

- Personnel who experience emotional difficulty with recovery often do not want to be dismissed, which may contribute to a sense of failure in an activity for which they felt a “calling.” Assign them to another task in which they can contribute, but do not use the individual’s desire to continue work as the sole factor determining assignment of duties.
- Allow variations of tasks so workers can adjust their exposure to the stress of finding and removing bodies.

- Supervisors should not require the same actions of everyone. Every individual has different motivations and a different way of approaching the task of recovering bodies.
- Advise workers –especially those who had volunteered for the task with minimal training – not to personalize or identify with bodily remains of victims or with the circumstances or environment in which the tragedy occurred.

Source: American Psychiatric Association. *Managing the Stress of Those Who Must Recover The Bodies*. [www.psych.org/public\\_info](http://www.psych.org/public_info), 2001

**IDENTIFICATION** - Medical examiners try to match up some of the 19,712 body parts recovered from the site. Of that grim collection of human remains, some 16,000 parts are still unidentified.



### **Keys to Proper Crisis Response and Stress Management for Healthcare Providers**

- Provide for physical safety and security.
- Limit work hours to no more than 12-hour shifts.
- Carefully schedule personnel to fully cover long-term needs, not acute crisis.
- Encourage self care, self monitoring and peer monitoring.
- Communicate clearly, firmly and optimistically.

- Develop a resource facility and staff management plan when scope and nature of disaster becomes clear and follow the plan with necessary modifications as the situation changes.
- Identify and correct mistakes when they occur. Management must be responsive to requests for resources and changes in deployment as the situation unfolds.
- Provide off-site personnel with a means of communication to central command so they can advise about needs, necessary changes, and incoming wounded.



- Encourage medical providers to monitor self and peers for essential needs – food, fluids, sleep, communication with family, social interaction, and debriefing. Fatigue will adversely affect patient care.
- Ensure regular breaks from tending to patients. Encourage relaxation. Normal live events are a respite from the horror of disaster.
- Establish a private place for caregivers to go to relax, talk with colleagues, decompress, or receive support.

- Hold departmental/hospital-wide meetings to inform staff of progress, plans, events, or findings that affect their safety, jobs or patient treatment.
- Use recognition awards or hospital papers to honor people and maintain morale.
- Develop support programs for families of staff that provide information on the status of staff unable to return home or communicate (i.e., air ambulance crews, ambulance personnel, trauma surgeons, etc.)
- Establish critical incident stress debriefings after acute response is over.

### **Factors Predicting Symptomatic Distress in First Responders**

- Routine job of being a first responder produces chronic stress.
- In Wagner's study of 402 professional German firefighters, there was a 18.2% prevalence rate of PTSD. 27% suffered from anxiety, depression, social dysfunction, and/or alcohol abuse.\*

\*Source: Wagner D, Heinrichs M & Ehler U: Prevalence of symptoms of post-traumatic stress disorder in German professional firefighters. *American Journal of Psychiatry*, 1998, 155:1727-1732.

### **Firefighters Most Likely to Develop PTSD in Wagner's Study**

- Older
- More job experience
- On scene
- More distressing missions in month preceding disaster
- More likely to be absent in subsequent fires
- More likely to retire early
- Stress due to exposure to total situation not related to specific job function

Source: Wagner D, Heinrichs M & Ehler U: Prevalence of symptoms of post-traumatic stress disorder in German professional firefighters. *American Journal of Psychiatry*, 1998, 155:1727-1732.

### **PTSD in Australian Firefighters After Exposure to Massive Fire**

- At 4 months – 32%
- At 11 months – 27%
- At 29 months – 30%
- 25% were injured fighting this blaze
- 20% perceived their situation as life threatening
- No body recovery was involved in this fire, unlike urban disasters

Source: McFarlane AC: Life events and psychiatric disorder: the role of a natural disaster. *British Journal of Psychiatry*, 14:221-228.

**Ersland showed that 24% of rescue workers to an oil rig fire Developed PTSD.**

Source: Ersland S, Weisaeth L, Sund A: The stress upon rescuers involved in an oil rig disaster: "Alexander L. Kielland, 1980." *Acta Psychiatrica Scandinavica* 355:38-49, 1989.

### **Major Factors Causing PTSD In Meta-analysis of Firefighting Studies**

- Intensity and duration of the exposure to trauma
- Severe, chronic fatigue
- Repetitive exposure
- Threats to life of firefighter
- Grief, lost colleagues
- Body removal – dealing with mutilated bodies

### **Major Factors**

- Prolonged separation from family.
- Lack of equipment/back-up resources.
- Fear of equipment failure.
- Uncertainty of threat.

Once job-related anxiety begins, repetitive re-exposure to traumatic stimuli sensitizes toward the development of PTSD.

“A traumatized firefighter is not able to avoid those stimuli unless he quits the profession, takes a leave of absence, or transfers to a non-emergency position like administration or a command-and-control-centered head office.”

Source: Wagner D, Heinrichs M & Ehler U: Prevalence of symptoms of post-traumatic stress disorder in German professional firefighters. *American Journal of Psychiatry*, 1998, 155:1727-1732.

### **Early Psychological Symptoms in Rescue Firefighters Later Developing PTSD**

- Identification with the victims
- Feelings of helplessness and guilt
- Fear of unknown
- Psychophysiological stress reactions

Source: Fullerton CS, McCarroll JE, Ursano RJ, et al: Psychological responses of rescue workers: firefighters and trauma. *American Journal of Orthopsychiatry*, 62:371-378.

### **Factors Reported by Affected Firefighters as Best Mitigating Stress Reactions**

- Availability of social support, rest, a quiet environment to regroup in, ability to contact family.
- Limiting duration of exposure.
- Type of leadership provided – local, supportive, decisive, empathetic.
- Level of previous training.

### **Mitigating Factors**

- Intelligence on nature of threat and specific action plan.
- On-duty briefing – i.e., what to expect when returning to the scene.
- Use of rituals.

**WTC: A firefighter takes a moment to pet Nikie, a therapy dog who comforted workers at the site**



### **Psychiatric Disorders Seen in First Responders and Their Families**

- Firefighters and police officers are at increased risk for developing PTSD, acute stress syndromes, anxiety disorders, depression, alcoholism, personality changes, insomnia, substance misuse and abuse, spousal abuse, divorce, and suicide than the population at large.

### **Psychiatric Disorders Seen in First Responders and Their Families**

- The incidence of alcoholism and substance abuse disorders increases dramatically in personnel who develop PTSD. Alcohol and drugs are used to modify developing psychological symptoms. The PTSD most often precedes their use.

### **Acute Stress Response (ASR)**

- Incidence in seasoned veterans exposed to horrific situations between 10 – 20%.

### **Factors Increasing the Likelihood of Development of ASD and PTSD**

- Having to deal with unknown and unexpected events and consequences.
- Prolonged service.
- Fatigue.
- Social and family isolation.
- Managerial conflict during the time of the acute stress.
- Loss of colleagues and personal friends.
- Dealing with massive numbers of casualties.

### **Symptoms of ASR Reported by WTC First Responders (onset within 4 weeks of attack and lasting between 2 and 30 days)**

- Sense of numbing, detachment, or an absence of emotional responsivity.
- Reduced awareness of surroundings – feeling as if in a daze – “the stare”.
- Derealization.
- Depersonalization.
- Dissociative amnesia may occur. Many firefighters couldn’t remember what they did during the first 2 days of duty.

### **ASR Symptoms**

- Reliving the experience through recurrent images, thoughts, dreams, flashbacks, or a sense of reliving the experience with autonomic arousal, when recounting it or seeing it on TV.
- Avoidance of stimuli – wants to be alone – detached from family and friends.
- Difficulty sleeping.
- Increased irritability, anger, argumentativeness.

### **ASR Symptoms**

- Diminished concentration.
- Hypervigilance.
- Motor restlessness.
- Exaggerated startle response.
- Not able to relax - “wound tight” “wired” “3 clicks too tight”.

### **ASR Symptoms**

- Disrupted work performance or inability to return to normal duties.
- Disrupted interpersonal relationships with family, children, peers, or authority figures.
- Symptoms make first responders feel “emotionally vulnerable” or “changed”.

**PTSD – Onset 30 days and beyond after attack, persists for at least 1 month.**

### **Signs and Symptoms of PTSD**

- Exposure to highly disturbing event.
- Continual re-experiencing of event in thoughts and dreams.
- Avoidance of associated stimuli.
- Appearance of cognitive, emotional, behavioral, and physical signs and symptoms that were not present prior to the event and have lasted longer than one month.

### **PTSD Signs**

- Most common emotional symptoms include:
  - Memory loss for important aspects of event
  - Loss of interest in activities previously enjoyed
  - Feeling of detachment and estrangement from others
  - Sleep disturbances
  - Difficulty concentrating
  - Intense irritability
  - Loss of emotional control
  - Lowered frustration tolerance

Individuals who experience acute stress disorders, adjustment disorders, or dissociated phenomenon, either during or after the event, and those who lose emotional control during the event or experience an overwhelming psychophysiological response or panic attack are more likely to develop PTSD.

Other psychiatric disorders that have occurred in first responders exposed to WMD include:

- Brief reactive psychosis – psychotic features that quickly clear with rest and medication.
- Acute DT's – in closet alcoholics deprived of ETOH.
- Major depressive episodes – in the context of ASD.

Other psychiatric disorders that have occurred in first responders exposed to WMD include:

- Dissociative fugue states – People function and travel with no memory of their movements – at increased risk for PTSD.
- Adjustment disorders, anxiety, tearfulness, lability of mood – Response to pathological stress – at a higher risk for developing PTSD.

Ursano notes that many first responders develop subclinical symptoms that don't formally qualify as PTSD, but which respond well to treatment.

Ursano RJ, Fullerton CS, Vance K et al: Post-traumatic stress disorder and identification in disaster workers. *American Journal of Psychiatry*, 156:353-359.

Acute stress disorder and major anxiety disorders best treated by:

- Early recognition.
- Anxiolytics and SSRIs to treat hyperarousal, insomnia, irritability. Doxepin for anxiety, panic, sleep disturbance.
- Cognitive behavioral therapy.
- A period off the line, rest, then a return to duty within 24-72 hours if symptoms resolved and performance not impaired by medications.
- Continue medications for 1 to 6 months, then reevaluate.

PTSD best treated by:

- Early recognition and intervention.
- Organizationally sanctioned and mandated prompt and effective treatment.
- Education about nature and incidence of disorder – not weakness or moral turpitude.
- Weekly or biweekly (at first) cognitive behavioral therapy.
- SSRIs (Lexapro, Zoloft, etc.) or other medications as indicated.
- Family involvement and therapy as appropriate.
- Remain in community.

### **Marital Therapy for Patients with PTSD**

- Highly effective.
- Helps prevent relapse.
- Supports family and spouse, who in turn support patient.
- Establishes family monitoring system.
- Provides family with route to contact therapist.

### **Marital Therapy**

- Permits outreach to family.
- Reduces alienation and fear the family faces in dealing with “changed” patient.
- Communicates hope, sense of involvement and helping role to family, and reduces helplessness.

### **Treatment Goal for PTSD**

- Stop emergence – treat symptoms early.
- Once established, there is a 33-50% probability it will become a chronic psychiatric disorder irrespective of the patient’s treatment status.

High prevalence of comorbid disorders  
-62-99% in studies – particularly:

- Mood disorders.
  - Major depression
  - Anxiety disorders, phobias
- Alcohol and substance abuse and dependence.
- Cluster B personality disorders – antisocial, borderline, conduct disorders.

PTSD is primary disorder for mood and substance use disorders in men and women and primary for conduct disorders among women.\*

Anxiety disorders are usually primary in men and women when they occur with PTSD.

\*Kessler RC, Sonnega A, Bromet E, et al: Post-traumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*, 52:1048-1060, 1995.

### **Injury and Loss of Role, Self-Esteem, and Pride**

1<sup>st</sup> responders who are dropped from the force because of injury in the line of duty:

- Often feel angry, frustrated, and betrayed by organization
- May become bitter, litigious, obstructive
- Have increased rates of:
  - Major depression
  - Alcohol and substance use disorders
  - Conduct disorders
  - Suicide

### **Injury**

The organization should attempt to find such injured workers other productive jobs if possible. To reciprocate loyalty is an important morale multiplier!

### **Treatment Data**

PTSD data from combat military and reserve personnel exposed to overwhelming stimuli:

- ASD occurs in between 10 – 33% during career.
- 50% of individuals with ASD go on to develop PTSD. (5-17% of total group) and be symptomatic at the end of 20 years.

### **Treatment Data**

PTSD data from combat military and reserve personnel exposed to overwhelming stimuli:

- Recovery rates highest in patients treated during first 12 months after onset of symptoms.
- Outcomes worst for patients who have symptoms but refuse early treatment and in those whose treated symptoms persist beyond 6 years.

### **Treatment Data**

Average duration of symptoms with early effective treatment – 36 months. Quality of life post treatment – much improved, as rated by patient and family, compared to untreated group.

- Average duration of symptoms if untreated – 64 months.
- 1/3 of patients – treated or untreated – never recover.

### **Risk Factors for PTSD**

- Acute Stress Disorder.
- Increased age.
- Responders who are overwhelmed by fear – battle fatigue.
- Poorly defined threat (biological, chemical, nuclear, radiological, booby traps, etc.)
- Past history of major depression, anxiety, panic disorders, somatization disorder, hypochondriasis, personality disorder, or substance or alcohol abuse.

### **Risk Factors**

- Women – greater risk by factor of 2-6x.
- Physical injury sustained, especially burns, concussion, traumatic epilepsy, sensory loss, spinal cord lesions, or loss of limb.
- High degree of threat to patient's life.
- Prolonged community disruption or inability to return to work.
- Experience extensive personal loss – family, friends, job, etc.

### **Impact On Families**

- Spouses of 1<sup>st</sup> responders have to:
  - Provide support for family during crisis – often alone.
  - Care for children – alone.
  - Provide support for spouse.
  - Deal with physical injury or illness.
  - Deal with being separated and alone during disaster.
  - Give up options for self protection and self care.

### **Impact on Families**

Choose between best interests of self, children and spouse.

- Deal with uncertainty – if spouse injured:
  - Will they fully recover physically/mentally?
  - Will marriage be the same? Stable?
  - Will spouse be able to care for children?
  - Will financial security be jeopardized?
  - Will they be helpless? Can they help? =
- Spouses need to be brought into treatment loop, given information, have contact, and be part of treatment process.

### **Model Community Intervention**

#### **Attack on Pentagon–Military Response**

- Few psychiatric casualties for 2 weeks. Then many appeared with psychosomatic symptoms. (In contrast to WTC, where 7,000 psychiatric casualties were seen at St. Vincent's Hospital during the first 2 days, mostly with ASD and anxiety disorders.)
- Response team provided consultation on management of bereavement, anxiety, ASD, and PTSD to community leaders and police/fire departments.

### **Intervention**

- Evaluation for psychiatric treatment.
- Provided individual, group and family therapy, and group information briefings to normalize reactions to event.
- Unit debriefings to enhance communication and unit cohesion in 1<sup>st</sup> responders.
- Outreach to family assistance and child development centers and schools.

### **Intervention**

- Clinic staff bolstered to treat patients.
- Health surveillance program instituted to assess nature of responses seen and effects of intervention.
- Specific outreach to 1<sup>st</sup> responders (police, firefighters, body recovery personnel) experiencing anxiety, insomnia, thought intrusion, depression, or uncharacteristic withdrawal.

### **Intervention**

Thomas Grieger, MD, noted that “resilience of the victims has been the norm. We have seen at this early date few severe psychiatric consequences as a result of these terrorists acts. Our primary care colleagues, however, are seeing large numbers of patients with exacerbations of somatic complaints.



### **Intervention**

Referrals to our clinics and psychiatric consultation services have, however, risen dramatically. We don't yet know the full impact of these events, as they will evolve over time. Our stance is to be as knowledgeable as possible, flexible, and responsive to situations we cannot reasonably predict." (2001)